CLAIMS:

1. Method of controlling an electrically actuated wear adjusting device (156) of a brake application system (1) for vehicles, particularly for rail vehicles, characterized by

a) determining an actual application stroke of brake pads (12) onto an assigned brake disc (14) or brake drum during a service braking as a function of at least one measured application path traveled by the brake pads (12) and a measured braking force value assigned to this application path,

b) comparing the actual application stroke with a desired application stroke or a desired-application stroke tolerance range and, if the actual application stroke deviates therefrom, computing an adjusting path from the deviation,

c) electronically controlling the wear adjusting device (156) as a function of the computed adjusting path.

2. Method according to Claim 1, characterized in that the traveled application path of the brake pads (12) during the service braking is measured directly or indirectly on a moved component (4) of the brake application system (1).

3. Method according to Claim 1 or 2, characterized in that, during a service braking which took place at a lower braking force, only the braking force value which occurred for the first time and the assigned covered application path of the brake pads (12) are used for determining the actual application stroke.

4. Method according to Claim 3, characterized in that brakings at a lower braking force are brakings at which braking force values occur of approximately lower than or equal to 3% to 20% of a maximally possible braking force value.

5. Method according to Claim 2, characterized in that, during a service braking which took place at a higher braking force, the braking force value and the respectively assigned covered application path of the brake pads (12) are measured several times successively for determining a braking-force application path course, from which the actual application stroke is extrapolated.

6. Method according to Claim 5, characterized in that brakings at a higher braking force are brakings at which braking force values occur of approximately more than 3% to 20% of a maximally possible braking force value.

7. Method according to one of the preceding claims, characterized in that the wear adjuster (156) for the wear adjusting is actuated for a time depending on the adjusting path.

8. Method according to one of the preceding claims, characterized in that the adjusting of the brake pad play takes place in the released or not applied condition of the brake application system (1).

9. Method of controlling an electrically actuated wear adjusting device (156) of a brake application system (1) for vehicles, particularly for rail vehicles, characterized by

a) operating the brake application system (1) until the brake pads (12) have reached a defined desired application point or a desired application point tolerance range,

b) electrically actuating the wear adjusting device (156) until a measured electric braking force signal is present for the first time,

c) restoring the brake application system (1) in the release position.

10. Method according to Claim 9, characterized in that it is implemented at least for the upgrading or initialization from a position of the brake application system (1) subjected to an emergency release or an auxiliary release, together with a test run.

11. Device for controlling an electrically actuated wear adjusting device (156) of a brake application system (1) for vehicles, particularly for rail vehicles, characterized by

a) sensors (58, 70) for measuring at least an application path covered by brake pads (12) and a braking force value assigned to this application path during a service braking and for generating corresponding output signals,

b) devices for determining an actual application stroke of the brake pads (12) to an assigned brake disc (14) or brake drum as a function of the output signals,

c) devices for comparing the actual application stroke with a desired application stroke or a desired application stroke tolerance range and for calculating an adjusting path from the deviation,

d) devices for controlling the wear adjusting device (156) as a function of the calculated adjusting path.

12. Device according to Claim 11, characterized in that sensors for the path or angle measurement (70) as well as sensors (58) for the force measurement are provided.

13. Device according to Claim 12, characterized in that the brake application system (1) comprises a force converter (8) for converting energy supplied by a brake actuator (2) to a brake application movement, the force converter (8) containing a shearing force measuring screw (58) arranged in the flow of force as the sensor for measuring the force.

14. Device according to Claim 13, characterized in that the shearing force measuring screw (58) forms a hinge pin of a hinge (40) mutually connecting at least two force transmission elements (28, 36) of the force converter (8), at least one strain gauge being held at the circumference of the shearing force measuring screw (58), which strain gauge generates a corresponding signal acting upon the hinge (40) and being proportional to the just existing braking force.

15. Device according to Claim 14, characterized in that the sensors for the path or angle measurement contain an angle encoder (70) which measures the angle of rotation of a motor (4) driving the brake actuator (2) and modulates a corresponding signal.

16. Device according to Claim 15, characterized in that the devices for determining an actual application stroke, the devices for comparing the actual application stroke with a desired application stroke or a desired application stroke tolerance range as well as the devices for controlling the wear adjusting device are formed by an electronic control and automatic control unit (60) having at least one microcomputer which communicates with the sensors (58, 70) and the wear adjuster (156).

17. Device according to Claim 16, characterized in that the electrically actuated wear adjusting device has a wear adjuster constructed as a brake rod or thrust rod actuator (156), with a screw drive (2') having a threaded spindle (4') as a screw parts and a nut (8') which can be screwed to the threaded spindle (4'), one screw part (4') of the screw drive (2')

being electrically driven for the wear adjusting, and the other screw part (8') being electrically driven for the emergency and/or auxiliary release of the brake.

18. Vehicle brake, particularly a rail vehicle brake, having an electrically actuated wear adjusting device (156) of a brake application system (1), containing a device according to one or more of Claims 11 to 17.